Abstract: S. LeBlanc

Title: First transmitted hyperspectral light measurements and cloud properties from recent field campaign sampling clouds under biomass burning aerosol

We present a first view of data collected during a recent field campaign aimed at measuring biomass burning aerosol above clouds from airborne platforms. The NASA ObseRvations of CLouds above Aerosols and their intEractionS (ORACLES) field campaign recently concluded its first deployment sampling clouds and overlying aerosol layer from the airborne platform NASA P3. We present results from the Spectrometer for Sky-Scanning, Sun-Tracking Atmospheric Research (4STAR), in conjunction with the Solar Spectral Flux Radiometers (SSFR). During this deployment, 4STAR sampled transmitted solar light either via direct solar beam measurements and scattered light measurements, enabling the measurement of aerosol optical thickness and the retrieval of information on aerosol particles in addition to overlying cloud properties. We focus on the zenith-viewing scattered light measurements, which are used to retrieve cloud optical thickness, effective radius, and thermodynamic phase of clouds under a biomass burning layer. The biomass burning aerosol layer present above the clouds is the cause of potential bias in retrieved cloud optical depth and effective radius from satellites. We contrast the typical reflection based approach used by satellites to the transmission based approach used by 4STAR during ORACLES for retrieving cloud properties. It is suspected that these differing approaches will yield a change in retrieved properties since light transmitted through clouds is sensitive to a different cloud volume than reflected light at cloud top. We offer a preliminary view of the implications of these differences in sampling volumes to the calculation of cloud radiative effects (CRE)